

Unit One: Geology

I. Structure of the Earth

A. Core - composed of iron and nickel, extremely hot

1. Inner Core - solid metal due to pressure
2. Outer Core - extremely hot liquid metals

B. Mantle - thin, hot layer found under Earth's crust

C. Crust or Lithosphere - thin, outer layer of the Earth composed of solid rock

1. Continental crust, composed primarily of granite, is thicker
2. Oceanic crust, composed primarily of basalt, is thinner

II. Plate Tectonics - theory that the lithosphere is broken into moving plates.

A. History

1. Continental Drift Theory was first proposed by Alfred Wegener in 1912.
2. Theory was not accepted until the ocean floor was explored using SONAR.

B. Continental Drift Theory

1. All continents were once joined to form a super continent called Pangaea.
2. Pangaea broke into plates to form the continents.
3. The plates are still drifting apart.

C. Plates - large sections of the Earth's crust

1. About 20 plates - 7 large, 13 small
2. Largest plate is the Pacific Plate

D. Plate Movement - plates move as a result of convection currents in hot magma.

1. Colliding Boundaries - plates push against each other;
Also known as convergent boundaries
Ex. formation of the Himalayas
2. Spreading Boundaries - plates are pulled apart
Also known as divergent boundaries
Ex. formation of the Great Rift Valley in Africa
3. Fault Boundary - two plates moving past each other;
Also known as sliding boundaries
Ex. formation of the San Andreas fault in California

E. Seafloor Spreading

1. Harry Hess- U.S. Geologist
 - a. used sonar while serving in the Navy during WW2

and later used the technology to map the ocean floor
and recognized that a line of mountains existed on
the floor of the ocean

b. suggested that the line of mountains was a crack in the
Earth's surface where new crust formed; pushing older
crust to the side moving it like a conveyor belt;
therefore the Seafloor was spreading.

c. older crust eventually reaches a trench where it slides
down back into the mantle and melts into magma

d. evidence

1) younger rocks found closer to the ridge of mountains
while older rock is farther away